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MEMORANDUM

DATE: November 30, 2005

TO: Ken Marcy, Task Monitor, EPA, Seattle, Washington, Mail Stop ECL-115

FROM: Linda Foster, START-2 Project Leader, E & E, Seattle, Washington LF

SUBJECT: Hazard Ranking System Score
Atka Cape Kudugnak
Atka Island, Alaska

REF: Contract Number 68-S0-01-01
Technical Direction Document Number 03-08-0006

A Hazard Ranking System (HRS) score of 6.67 was derived for the Atka Cape Kudugnak (ACK) site as part of a combined preliminary assessment (PA)/site inspection (SI). The ACK site consists of two drum dumping areas located east of Atka, Alaska. The West Area (WA) consists of two drum dumping locations approximately 10 miles east of Atka. There are approximately 100 surface drums located approximately 0.05 mile west of an unnamed lake and approximately 90 surface drums located approximately 0.05 mile east of an unnamed lake. The East Area (EA) covers approximately 260,000 square feet and is located approximately 10.5 miles east of Atka and approximately 0.5 mile west of the Pacific Ocean. The score is based on the combined PA/SI report and, when necessary, professional assumptions.

The HRS scoresheets, which were generated using Quickscore version 2.2 software, are attached. The following information and assumptions were used to derive the score.

Sources:

- **East Area (EA) Contaminated Soil.** There are approximately 100 drums and 2 ASTs. The EA covers approximately 260,000 square feet, but the area with the drums and ASTs covers only about 500 square feet. Contaminants associated with this source include the Target Analyte List (TAL) metals arsenic, chromium, copper, lead, manganese, vanadium, and zinc. The hazardous waste quantity value for this source is 0.0147 (i.e., 500 square feet/34,000 for Tier D). The containment factor value for this source for all pathways is 10.

- **West Area (WA) Contaminated Soil.** There are approximately 190 drums. The WA covers approximately 32,000 square feet. Contaminants associated with this source include the TAL metals arsenic, chromium, copper, lead, manganese, nickel, vanadium, and zinc. The hazardous waste quantity value for this source is 0.9412 (i.e., 32,000 square feet/34,000 for Tier D). The containment factor value for this source for all

pathways is 10.

Groundwater Migration Pathway:

- An observed release to the groundwater migration pathway is not assumed. There are no drinking water wells on the island; all drinking water is provided from surface water. There are no groundwater targets, therefore the groundwater migration pathway will not be evaluated.

Surface Water Migration Pathway:

- An observed release was documented for the surface water migration pathway. The sediment sample collected from the unnamed lake in the WA had elevated results for the TAL metals lead and vanadium.
- The probable point of entry (PPE) for the surface water migration pathway from the EA exists where the drum area discharges via sheet flow to various small streamlets then to the Pacific Ocean approximately 0.5 mile from the EA. The EA 15-mile surface water TDL is a 15-mile radial arc in the Pacific Ocean and Nazan Bay. The PPEs for the WA begins where the drum areas discharge via sheet flow to the unnamed lake. From these points, the lake flows approximately 0.05 mile. The WA 15-mile surface water TDL concludes as a 14.95-mile radial arc in Nazan Bay and the Pacific Ocean.
- The flow for the unnamed lake to Nazan Bay is not available. For scoring purposes, it is estimated the flow to Nazan Bay is less than 10 cubic feet per second.
- Soils at both areas consist of silt and silty loam. Soil group designation C is assigned for the site.
- The drainage area is estimated at 1,000 acres at the EA and 500 acres at the WA.
- The 2-year, 24-hour rainfall event is 2.57 inches.
- The runoff factor value for each drum cache is 17 for the EA and 7 for the WA.
- The WA is assumed to be located in a 100-year flood plain. The EA is located outside of a flood plain.
- Surface water within the 15-mile TDL is not used for drinking water.
- The surface water TDL for both areas is used for recreational boating and as a supply for a major or designated water recreation area (Nazan Bay and the Pacific Ocean).
- The total fishing harvest within the 15-mile TDL is unknown. A majority of the commercial fish harvest occurs beyond the 15-mile TDL, although some commercial fishing is reported to occur approximately 12 to 15 miles from shore. Subsistence fishing occurs in Nazan Bay. No fishing is known to occur in the unnamed lake near the WA. The START-2 estimates the annual commercial and recreational fish harvest within the TDL to be between 1,000 and 10,000 pounds.
- The human food chain individual factor value is 20.
- Federal-listed species that may be present along the 15-mile TDL include

- The endangered Stellar sea-lion
- The endangered Humpback whale
- The endangered Short-tailed albatross
- The threatened Steller's eider
- The candidate Northern Sea-Otter

- The Alaska Maritime National Wildlife Refuge is located on all public-owned lands in the coastal waters and adjacent areas of Alaska. It is assumed that portions of the Alaska Maritime National Wildlife Refuge are located with the 15-mile TDL.
- No National Wetland Inventory (NWI) maps exist for the area. Based on conversations with local residents, no wetlands are known to exist within the surface water migration pathway TDL for the site.

Soil Exposure Pathway:

- Exposed contaminated soil exists at the site. Contaminants present include heavy metals.
- The site is not fenced and is accessible to the public. For scoring purposes, the drum caches are considered to be moderately accessible with some public recreation use.
- No work places, residences, schools, or daycare facilities occur on the area of observed contamination.
- No terrestrial sensitive environments are documented to occur on an area of contamination.
- The nearest individuals are located more than 10 miles from the site. A nearby individual factor value of 0 is assigned.
- No people live within 1 mile of the site.
- No resources such as commercial agriculture, silviculture, or livestock production occur on an area of possible contamination.

Air Migration Pathway:

- An observed release to the air migration pathway is not assumed. Targets are subject to potential contamination.
- The gas containment factor value is 10 and the gas source type factor value is 19.
- The particulate containment factor value is 10 and the particulate source type factor value is 22.
- No people reside or attend school within 4 miles of the site.
- No people work within 1 mile of the site.

- Federal-listed threatened species occur within the 15-mile surface water TDL and are likely to occur within the air migration pathway 4-mile TDL for the site. For scoring purposes, all species are assumed to be present within 3 to 4 miles of the site.

  The species include the following:

  - The endangered Stellar sea-lion
  - The endangered Humpback whale
  - The endangered Short-tailed albatross
  - The threatened Steller's eider
  - The candidate Northern Sea-Otter

- No National Wetland Inventory (NWI) maps exist for the area. Based on conversation with local residents, not wetlands area known to exist within the air migration pathway TDL for the site.

If you have any questions regarding this memorandum or its assumptions, please contact me at 206-624-9537.

****** CONFIDENTIAL ******
******PRE-DECISIONAL DOCUMENT ******
****** SUMMARY SCORESHEET ******
****** FOR COMPUTING PROJECTED HRS SCORE ******

****** Do Not Cite or Quote ******

Site Name: Atka Cape Kudugnak

Region: 10

City, County, State: Aleutians West Census Area AK

Evaluator: Mark Woodke

EPA ID#: AKN001002630

Date: 11/30/2005

Lat/Long: 52 13'39.864" N 174 3'56.646 W

T/R/S: Section 9, Township 92 South, Range 175 West, Umiat Meridian

Congressional District: One

This Scoresheet is for: Combined PA/SI

Scenario Name: Drums

Description: Watershed 1

	S pathway	S^2 pathway
Ground Water Migration Pathway Score (S_{gw})	0	0
Surface Water Migration Pathway Score (S_{sw})	13.33	177.6889
Soil Exposure Pathway Score (S_s)	0	0
Air Migration Score (S_a)	0	0
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		177.6889
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		44.422225
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4}$		6.67

* Pathways not assigned a score (explain): The groundwater migration pathway was not scored as there are no groundwater users on Atka Island.

TABLE 3-1 --GROUND WATER MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned
Aquifer Evaluated:		
Likelihood of Release to an Aquifer:		
1. Observed Release	550	
2. Potential to Release:		
2a. Containment	10	
2b. Net Precipitation	10	
2c. Depth to Aquifer	5	
2d. Travel Time	35	
2e. Potential to Release [lines 2a(2b + 2c + 2d)]	500	
3. Likelihood of Release (higher of lines 1 and 2e)	550	0
Waste Characteristics:		
4. Toxicity/Mobility	(a)	
5. Hazardous Waste Quantity	(a)	
6. Waste Characteristics	100	0
Targets:		
7. Nearest Well	(b)	
8. Population:		
8a. Level I Concentrations	(b)	
8b. Level II Concentrations	(b)	
8c. Potential Conamination	(b)	
8d. Population (lines 8a + 8b + 8c)	(b)	
9. Resources	5	
10. Wellhead Protection Area	20	
11. Targets (lines 7 + 8d + 9 + 10)	(b)	0
Ground Water Migration Score for an Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,5000][c]	100	0.00
Ground Water Migration Pathway Score:		
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evalueated)[c]	100	0.00

[a] Maximum value applies to waste characteristcs category
[b] Maximum value not applicable
[c] Do not round to nearest integer

TABLE 4-1 --SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Watershed Evaluated: Watershed 1			
Drinking Water Threat			
Likelihood of Release:			
1. Observed Release	550	550	
2. Potential to Release by Overland Flow:			
2a. Containment	10	10	
2b. Runoff	10	17	
2c. Distance to Surface Water	5	25	
2d. Potential to Release by Overland Flow [lines 2a(2b + 2c)]	35	420	
3.Potential to Release by Flood:			
3a. Containment (Flood)	10	10	
3b. Flood Frequency	50	25	
3c. Potential to Release by Flood (lines 3a x 3b)	500	250	
4. Potential to Release (lines 2d + 3c, subject to a maximum of 500)	500	500	
5. Likelihood of Release (higher of lines 1 and 4)	550		0
Waste Characteristics:			
6. Toxicity/Persistence	(a)	10000	
7. Hazardous Waste Quantity	(a)	10	
8. Waste Characteristics	100		18
Targets:			
9. Nearest Intake	50	0	
10. Population:			
10a. Level I Concentrations	(b)	0	
10b. Level II Concentrations	(b)	0	
10c. Potential Contamination	(b)	0	
10d. Population (lines 10a + 10b + 10c)	(b)	0	
11. Resources	5	5	
12. Targets (lines 9 + 10d + 11)	(b)		5
Drinking Water Threat Score:			
13. Drinking Water Threat Score [(lines 5x8x12)/82,500, subject to a max of 100]	100		0
Human Food Chain Threat			
Likelihood of Release:			
14. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics:			
15. Toxicity/Persistence/Bioaccumulation	(a)	50000000	
16. Hazardous Waste Quantity	(a)	10	
17. Waste Characteristics	1000		100
Targets:			
18. Food Chain Individual	50	20	
19. Population			
19a. Level I Concentration	(b)	0	
19b. Level II Concentration	(b)	0	
19c. Potential Human Food Chain Contamination	(b)	3E-5	
19d. Population (lines 19a + 19b + 19c)	(b)	0	
20. Targets (lines 18 + 19d)	(b)		20
Human Food Chain Threat Score:			
21. Human Food Chain Threat Score [(lines 14x17x20)/82500, subject to max of 100]	100		13.33
Environmental Threat			

Likelihood of Release:			
22. Likelihood of Release (same value as line 5)	550		550
Waste Characteristics:			
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5000000	
24. Hazardous Waste Quantity	(a)	10	
25. Waste Characteristics	1000		56
Targets:			
26. Sensitive Environments			
26a. Level I Concentrations	(b)	0	
26b. Level II Concentrations	(b)	0	
26c. Potential Contamination	(b)	0.00425	
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)	0	
27. Targets (value from line 26d)	(b)		0
Environmental Threat Score:			
28. Environmental Threat Score [(lines 22x25x27)/82,500 subject to a max of 60]	60		0
Surface Water Overland/Flood Migration Component Score for a Watershed			
29. Watershed Score[c] (lines 13+21+28, subject to a max of 100}	100		13.33
Surface Water Overland/Flood Migration Component Score			
30. Component Score (S_{sw})[c] (highest score from line 29 for all watersheds evaluated)	100		13.33

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

TABLE 4-25 --GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Aquifer Evaluated: Watershed 1			
Drinking Water Threat			
Likelihood of Release to an Aquifer:			
1. Observed Release	550	0	
2. Potential to Release:			
2a. Containment	10	10	
2b. Net Precipitation	10	10	
2c. Depth to Aquifer	5	5	
2d. Travel Time	35	35	
2e. Potential to Release [lines 2a(2b + 2c + 2d)]	500	500	
3. Likelihood of Release (higher of lines 1 and 2e)	550		500
Waste Characteristics:			
4. Toxicity/Mobility	(a)	10000	
5. Hazardous Waste Quantity	(a)	10	
6. Waste Characteristics	100		18
Targets:			
7. Nearest Well	(b)	0	
8. Population:			
8a. Level I Concentrations	(b)	0	
8b. Level II Concentrations	(b)	0	
8c. Potential Contamination	(b)	0	
8d. Population (lines 8a + 8b + 8c)	(b)	0	
9. Resources	5	0	
10. Targets (lines 7 + 8d + 9)	(b)	0	
Drinking Water Threat Score:			
11. Drinking Water Threat Score ([lines 3 x 6 x 10]/82,500, subject to max of 100)	100		0
Human Food Chain Threat			
Likelihood of Release:			
12. Likelihood of Release (same value as line 3)	550		500
Waste Characteristics:			
13. Toxicity/Mobility/Persistence/Bioaccumulation	(a)	50000000	
14. Hazardous Waste Quantity	(a)	10	
15. Waste Characteristics	1000		100
Targets:			
16. Food Chain Individual	50		
17. Population			
17a. Level I Concentration	(b)	0	
17b. Level II Concentration	(b)	0	
17c. Potential Human Food Chain Contamination	(b)	0.0009	
17d. Population (lines 17a + 17b + 17c)	(b)	0	
18. Targets (lines 16 + 17d)	(b)		2
Human Food Chain Threat Score:			
19. Human Food Chain Threat Score [(lines 12x15x18)/82,500,suject to max of 100]	100		1.212121212 12121
Environmental Threat			
Likelihood of Release:			
20. Likelihood of Release (same value as line 3)	550		500
Waste Characteristics:			
21. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	5000000	

22. Hazardous Waste Quantity	(a)	10	
23. Waste Characteristics	1000		56
Targets:			
24. Sensitive Environments			
24a. Level I Concentrations	(b)	0	
24b. Level II Concentrations	(b)	0	
24c. Potential Contamination	(b)	0.0045	
24d. Sensitive Environments (lines 24a + 24b + 24c)	(b)	0	
25. Targets (value from line 24d)	(b)		0
Environmental Threat Score:			
26. Environmental Threat Score [(lines 20x23x25)/82,500 subject to a max of 60]	60		0
Ground Water to Surface Water Migration Component Score for a Watershed			
27. Watershed Score[c] (lines 11 + 19 + 28, subject to a max of 100)	100		1.212121212 12121
28. Component Score (S_{gs})[c] (highest score from line 27 for all watersheds evaluated, subject to a max of 100)	100		1.212121212 12121

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] Do not round to nearest integer

TABLE 5-1 --SOIL EXPOSURE PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Exposure:			
1. Likelihood of Exposure	550		0
Waste Characteristics:			
2. Toxicity	(a)	10000	
3. Hazardous Waste Quantity	(a)	10	
4. Waste Characteristics	100		18
Targets:			
5. Resident Individual	50	0	
6. Resident Population:			
6a. Level I Concentrations	(b)	0	
6b. Level II Concentrations	(b)	0	
6c. Population (lines 6a + 6b)	(b)	0	
7. Workers	15	0	
8. Resources	5	0	
9. Terrestrial Sensitive Environments	(c)	0	
10. Targets (lines 5 + 6c + 7 + 8 + 9)	(b)		0
Resident Population Threat Score			
11. Resident Population Threat Score (lines 1 x 4 x 10)	(b)		0
Nearby Population Threat			
Likelihood of Exposure:			
12. Attractiveness/Accessibility	100	25	
13. Area of Contamination	100	20	
14. Likelihood of Exposure	500		5
Waste Characteristics:			
15. Toxicity	(a)	10000	
16. Hazardous Waste Quantity	(a)	10	
17. Waste Characteristics	100		18
Targets:			
18. Nearby Individual	1	0	
19. Population Within 1 Mile	(b)	0	
20. Targets (lines 18 + 19)	(b)		0
Nearby Population Threat Score			
21. Nearby Population Threat (lines 14 x 17 x 20)	(b)		0
Soil Exposure Pathway Score:			
22. Pathway Score[d] (S_s), [lines (11+21)/82,500, subject to max of 100]	100		0

[a] Maximum value applies to waste characteristics category

[b] Maximum value not applicable

[c] No specific maximum value applies to factor. However, pathway score based solely on terrestrial sensitive environments is limited to a maximum of 60

[d] Do not round to nearest integer

TABLE 6-1 --AIR MIGRATION PATHWAY SCORESHEET

Factor categories and factors	Maximum Value	Value Assigned	
Likelihood of Release:			
1. Observed Release	550	0	
2. Potential to Release:			
2a. Gas Potential to Release	500	0	
2b. Particulate Potential to Release	500	220	
2c. Potential to Release (higher of lines 2a and 2b)	500	220	
3. Likelihood of Release (higher of lines 1 and 2c)	550		220
Waste Characteristics:			
4. Toxicity/Mobility	(a)	2	
5. Hazardous Waste Quantity	(a)	10	
6. Waste Characteristics	100		2
Targets:			
7. Nearest Individual	50	0	
8. Population:			
8a. Level I Concentrations	(b)	0	
8b. Level II Concentrations	(b)	0	
8c. Potential Contamination	(c)	0	
8d. Population (lines 8a + 8b + 8c)	(b)	0	
9. Resources	5	0	
10. Sensitive Environments:			
10a. Actual Contamination	(c)	0	
10b. Potential Contamination	(c)	0.049	
10c. Sensitive Environments (lines 10a + 10b)	(c)	0	
11. Targets (lines 7 + 8d + 9 + 10c)	(b)		0
Air Migration Pathway Score:			
12. Pathway Score (S_a) [(lines 3 x 6 x 11)/82,500][d]	100		0.00

[a] Maximum value applies to waste characteristics category
[b] Maximum value not applicable
[c] No specific maximum value applies to factor. However, pathway score based solely on sensitive environments is limited to a maximum of 60.
[d] Do not round to nearest integer